FUNCTIONAL SKILLS MATHEMATICS

AQA | Edexcel | City & Guilds | Open Awards | NCFE | Highfield

Level 2

Density

Materials
- You **cannot** use a calculator for **questions** with this symbol.

Instructions
- Answer **all** questions.
- Answer questions on separate paper.

Information and Advice
- The marks for each question are shown in brackets – use this as a guide on how long to spend on each question.
- Read each question carefully before you answer it.
- Check you answers.

Q1   In each of the sets below, two of mass, density and volume are provided. Find the value of the third.

1(a)   1 g and 1 cm^3

[2 marks]

1(b)   1 cm^3 and 1 g/cm^3

[2 marks]

1(c)   1 g and 1 g/cm^3

[2 marks]

1(d)   1 kg and 1000 kg/m^3

[2 marks]

1(e)   5 g/cm^3 and 150 cm^3

[2 marks]

1(f)   8300 g and 16600 cm^3

[2 marks]

1(g)   5040 g and 21 g/cm^3

[2 marks]

1(h)   756 g and 252 cm^3

[2 marks]

1(i)   0.00125 g/cm^3 and 100000 cm^3

[2 marks]

1(j)   65536 kg and 0.00390625 m^3

[2 marks]

20

Turn over ►

Q2   Laura has different volumes of different liquids, as follows:
Water – 500 cm^3
Honey – 125 cm^3
Oil – 500 cm^3
Hand soap – 250 cm^3

2(a)   If the water weighs 500 g, what is the density of water?

[2 marks]

2(b)   The oil weighs 625 g. What is the density of the oil?

[2 marks]

2(c)   Find the density of the honey if it weighs 375 g.

[2 marks]

2(d)   The hand soap weighs 300 g, how dense is the hand soap?

[2 marks]

8

Q3 Emily has three different weights, and needs to find their mass.

3(a) The first weight is made of iron, which has density 7.9 g/cm^3. It has volume 8 cm^3.
What is the mass of this iron?

[2 marks]

3(b) The second weight is made of aluminium, which has density 2.7 g/cm^3. It has volume 64 cm^3. What is the mass of this aluminium?

[2 marks]

3(c) The third weight is made of lead, which has density 11.3 g/cm^3. It has volume 27 cm^3.
What is the mass of this lead?

[2 marks]

3(d) Emily finds two other weights, this time made of different stones.
One is made of sandstone, which has density 2.2 g/cm^3. It has volume 216 cm^3.
One is made of diorite, which has density 3.0 g/cm^3. It has volume 125 cm^3.
Which one has the greatest mass?

[3 marks]

Q4   David needs to know the volumes of several objects.
A – 200 g and 1 g/cm^3
B – 1320 g and 1.1 g/cm^3
C – 800 g and 1.6 g/cm^3
D – 10201 g and 1.01 g/cm^3
E – 10000 g and 1.25 g/cm^3

4(a)   Find the volumes of A and B.

[4 marks]

4(b)   David has two of C. What is the volume of two of C?

[3 marks]

4(c)   Which is larger – D or E? By how much?

[4 marks]

Q5 The following are the masses and volumes of some popular makes of vehicle:
Tayata Riva – 2000 kg – 8 m³
Valvo Bus – 5000 kg – 25 m³
Fait 220 – 1200 kg – 4 m³

5(a) What is the density of the Tayata Riva?

[2 marks]

5(b) Is the Valvo Bus the densest vehicle?

[3 marks]

5(c) The Scotia Nova weighs 2500 kg and is 6.25 m³ in size. Which cars is it denser than?

[3 marks]

Q6 Daniel has a number of cubes that all weigh the same. Below is what each cube is made of and the length of its side:

Lead – 1 cm
Aluminium – 8 cm
Iron – 4 cm
Gold – 3 cm

6(a) Calculate the density of every cube, if they all weigh 13824 g.

[8 marks]

6(b) Suppose instead the lead cube and aluminium cube weigh a combined 5130 g. What is their combined density?

[3 marks]